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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,219	10/11/2001	Ferdinand S. Signey	TI-27954	7795
23494	7590	12/14/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			ALIE, GHASSEM	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	

3724

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

TW

Office Action Summary	Application No.		Applicant(s)	
	09/975,219		SIGNEY ET AL.	
	Examiner		Art Unit	
	Ghassem Alie		3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (page 5, lines 19-27 of the specification), herein after AAPA, and in view of Distefano et al. (5,776,796), hereinafter Distefano, Maggio (5,834,084), Gurevich (4,928,384), or Quirke (6,676,486). Regarding claims 1 and 8, as admitted by the applicant cross sectioning of an integrated circuit package by a diamond blade saw is well known in the art. See page 5, lines 19-27 of the specification. AAPA also teaches that the diamond blade singulates the integrated circuit package to access an interior of the integrated circuit package. AAPA does not teach that a water jet cuts the integrated circuit package. However, substituting a water jet for other method of cutting of electronic packages is well known in the art such as taught by Distefano, Maggio, Gurevich, or Quirke. Distefano teaches that the integrated circuit package 10 cut by water jet or dicing saw, knife, rotary razor, or etc. See Figs. 1-8 and col. 5, lines 16-25 in Disfano. Maggio also teaches a step of cutting integrated circuit package 150 to be singulated with a water jet or other cutting means. The integrated circuit package 150 is singulated and simultaneously cut into a predetermined shaped which is in a shape of a square. See col. 10, lines 41-45 in Maggio. Gurveich also teaches that a electronic package or chip 12 is cut by suitable means known in the art such as diamond stylus, dicing with a diamond impregnated blade, or high pressure

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water jet. See Fig. 1-3 and col. 51-65 in Gurveich. Quirke also teaches that a water jet cuts an optical integrated circuit 10. See Figs. 1-7 and col. 6, lines 25-64 in Quirke. As is noted, the integrated package can be cut with many different cutting means and the water jet can substitute other cutting means including diamond blade saw for cutting through the integrated circuit package. It would have been obvious to a person of ordinary skill in the art to substitute the diamond blade saw for cutting through the integrated circuit package with the water jet, since the water jet, as an alternative, can cut the integrated saw package, as taught by Disfano, Maggio, Gurveich, or Quirke. In addition, the water jet provides a smooth, clean, rapid, and economical cut and it is a good substitute of other cutting means for cutting an integrated circuit package that is made of brittle materials.

Regarding claims 2, 3, 6, 7, 9, 12, and 13, at least AAPA as modified by Maggio or Distefano teaches that the step of positioning the integrated circuit package adjacent the water jet, inherently pressurizing the water jet such that the water jet is operable to cut the integrated circuit, and cutting the integrated package to predetermined shape. AAPA as modified by Maggio also teaches that the integrated circuit package includes a ball grid array package.

Regarding claim 4 and 10, AAPA as modified by Quirke, teaches that the water jet has a plurality of abrasive particles. See page col. 3, lines 1-27 and col. 4, lines 10-24 in Quirke.

Alternatively claims 4, 10, and 3, and 9 can be rejected as below.

3. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

AAPA in view of Distefano, Maggio, Gurevich, or Quirke, as applied to claims 1 and 8, and in further view of Hembree (6,574,858) or Hashish et al. (4,648,215), Hereinafter Hashish. Regarding claims 4 and 10, AAPA as modified above teaches everything noted above except that the water jet has abrasive particles used for cutting. However, Hashish teaches a water jet having abrasive particles used for cutting (abstract; col. 1, lines 24-26). Hembree also teaches a water jet having abrasive particles for cutting and singulating an integrated circuit package 10. See Figs. 1-3 and col. 4, lines 45-65 in Hembree. It would have been obvious to a person of ordinary skill in the art to provide the water jet of AAPA, as modified above, with abrasive particles, as taught by Hashish or Hembree, to enhance the cutting operation of the integrated circuit package.]

4. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Distefano, Maggio, Gurevich, or Quirke as applied to claims 1 and 8, and in further view of Hembree. AAPA, as modified above teaches everything noted above, except that the integrated circuit package includes a ball grid package. However, Hembree teaches a water jet having abrasive particles for cutting and singulating an integrated circuit package 10. Hembree also teaches that the integrated circuit package 10 has a ball grid package 16. Figs. 1-3 and col. 4, lines 45-65 in Hembree. It would have been obvious to a person of ordinary skill in the art to cut by AAPA's cutting device, as modified above, an integrated circuit package with a ball grid package, as taught by Hembree, since the water jet cutting device is capable of cutting the integrated circuit package that has a ball grid.

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

AAPA in view of Distefano, Maggio, Gurevich, or Quirke, as applied to claims 1 and 8, and in further view Romanini (6,305,261). AAPA, as modified above, teaches everything noted above except the step of pressurizing the cutting water jet to a pressure between approximately 500 psi and approximately 2500 psi. However, Romanini teaches pressurizing a cutting water jet to a pressure between approximately 500 psi and approximately 2500 psi (col. 1, lines 18 to 23). It would have been obvious to a person of ordinary skill in the art to provide the water jet of AAPA, as modified above, with a pressure between approximately 500 psi and approximately 2500 psi, as taught by Romanini, for optimum cutting.

Furthermore, it would have been obvious to a person of ordinary skill in the art to provide the water jet of AAPA, as modified above, with a pressure between approximately 500 psi and approximately 2500 psi, since the general condition of a cutting water jet, which by nature is pressurized, is disclosed by Distefano, Maggio, Gurevich, or Quirke and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges, in this case pressures, involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Amendment

6. Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Peyerson et al. (6,809,413), Conlon et al. (6,781,093), Lu et al. (5,961,860), Hass et al. (5,972,140), Morris et al. (2003/0034093), Ishyama (6,478,944), Lim et al. (6,331,737) teach a water jet cut through an integrated circuit package.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ghassem Alie whose telephone number is (571) 272-4501. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Allan Shoap can be reached on (571) 272-4514. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information

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for unpublished applications is available through Private PAIR only. For more information about the PAIR system, SEE <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (too-free).



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December 6, 2005